

REMARKS

STATUS

Claims 9, 11-12 and 15-21 were rejected under 35 USC 103(a)) as being unpatentable over Meissenberg et al. in view of Bruckner et al. (US 5,365,730)

Claims 13-14 were rejected under 35 USC 103(a)) as being unpatentable over Meissenberg et al. in view of Bruckner et al. and Linhardt (US 4,831,817).

Claims 1-8 and 10 were previously canceled.

Claim 9 has been amended herein.

Claims 9, 11-21 are presented for examination herein.

APPLICANT'S ARGUMENTS

The instant invention relates to a waste heat steam generator of a gas fired and steam powered generator. The generator comprises a waste heat boiler to which exhaust gas of a gas turbine can be supplied. The steam generator also comprises at least one evaporator which is located in the waste heat boiler and is used to produce process steam for a steam turbine. According to the invention, flue gas from a heating device can be supplied to the waste heat boiler and at least part of the flue gas can be extracted at least one point of the waste heat boiler and redirected back to the inlet of said waste heat boiler.

With respect to the rejection of independent claim 9, 11-12 and 15-21 (which is applicable all active claims in the instant application), Applicant has amended claim 9 to present a waste heat steam generator for a gas and steam power station, comprising:

a waste heat boiler that is supplied exhaust gas from a gas turbine at a waste heat boiler inlet opening;

multiple evaporators, including a high pressure evaporator, a medium-pressure evaporator, and a low-pressure evaporator arranged in the waste heat boiler to generate operating steam for a steam turbine, the high pressure evaporator connected to a high pressure steam drum, the medium-pressure evaporator connected to a medium pressure steam drum, and the low-pressure evaporator connected to a low pressure steam drum so that steam can be generated;

a heating device that supplies flue gas to the waste heat boiler,
an air control valve for controlling air entering the heating device;
a feedback line to feed back the flue gas to a circulation circuit;
a flue flow rate control valve for controlling the rate flue gas is applied to the circulation circuit;

wherein the circulation circuit has the heating device connected to it and is formed by a heating path through the waste heat boiler and the feedback line and a portion of the flue gas can be extracted at a point from the waste heat boiler and can be fed back to the inlet opening into the waste heat boiler; and

a slide connected to a respective feed water supply line and the respective steam drum in at least two of the evaporators so that when the selected supply line is opened or closed steam generation in the corresponding pressure stage is controlled;

wherein the heating device, heating device air control valve, flue rate flow control valve, and the slides allow auxiliary steam to be extracted from a low pressure evaporator by selectively controlling the high pressure evaporator and medium pressure evaporator in operating situations in which no exhaust gas is available from the gas turbine, including when the gas turbine is not in use or while the gas turbine is being started up or shut down.

Support for these amendments is found at paragraphs [0044-0069] of the Substitute Specification. No new matter has been added.

Independent claim 9 has been amended to more clearly present, among other things, explicit claim limitations such as the steam drums associated separately with a respective evaporator and evaporator slide, clearly distinguished control valves, the waste heat boiler inlet opening receiving both the exhaust gas from the gas turbine and an input from the circulation circuit, and the sending of that combination of gases across the evaporators, such that auxiliary steam can be extracted from a low pressure evaporator by selectively controlling the high pressure evaporator and medium pressure evaporator in operating situations in which no exhaust gas is available from the gas turbine, including when the gas turbine is not in use or while the gas turbine is being started up or shut down.

The ability to selectively control the high-pressure evaporator and medium-pressure evaporator during system operation when there is no exhaust gas from the gas turbine and utilize the control of those evaporators to ensure a continual output of auxiliary steam as presented is

unanticipated, unique, and non-obvious.

The Examiner has asserted Meissenberg et al. in view of Bruckner et al. discloses, inter alia, at page 5, paragraph 12 of the Office Action, that “Meissenberg et al. disclose a burner 12 capable of supplying heated flue gas to boiler thereby providing the ability to generate steam largely independent of the operating state of the bas and/or steam turbines.” Applicant traverses this assertion because Meissenberg et al. still lacks the functionality of the instant invention where Meissenberg et al. does not provide direct control over the evaporators it uses. Meissenberg et al. relies on back pressures, system response to generator load changes, and a safety valve to control the general operating state of the evaporators without being able to selectively control the evaporators.

Further, the invention of Meissenberg et al. operates, using only a single evaporator component or a high-pressure component (evaporator) and a low pressure component (evaporator) of the waste heat boiler but does not include a medium-pressure evaporator.

In contrast, the claim limitations of the instant invention recites, in relevant part, “... a high-pressure evaporator, a medium-pressure evaporator, and a low-pressure evaporator arranged in the waste heat boiler ...”. It is the control of the high and medium pressure evaporators that allows further control of the auxiliary steam output, which is provided via the low-pressure evaporator, even when no exhaust gases are provided.

The Examiner presents Bruckner et al. as teaching, inter alia, “ the use of valves 42,45 to adjust the amount of feed-water into drum 43. These valves, here interpreted as equivalent to a slide, are connected to a feed water supply line 37, 44, respectively ... “etc. Applicant asserts that even if the valves are considered equivalent to a slide, the invention of Bruckner et al. does not operate when the gas turbine is not in use and therefore the valves/slides do not control the evaporators as recited in claim 9 of the instant invention.

The operation of the slides of the instant invention is significant because closing a slide closes off an evaporator which it increases and/or redirects the steam through the remaining evaporators/pressure stages. Where the instant invention includes a circulation circuit for applying flue gas, the ability to close off one or more of the evaporators allows the system to use the gas from the heating device and thereby continue to operate even during system start up or shut down when little or no additional exhaust gas is provided to the waste heat steam generator by the gas turbine. This provides improved efficiency, which arises, in part, from the ability to

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use the heating device gas/flue gas to keep the steam lines hot even when the turbine is not providing exhaust gas.

Linhardt does not address closing off evaporators or system operation when the turbine is not providing exhaust gas.

With respect to the rejection of claims 13-14 under 35 USC 103(a) as being unpatentable over Meissenberg et al. in view of Bruckner et al. and Linhard:


As explain above Applicant asserts the base reference Meissenberg et al. fails to teach the instant invention and therefore the combination of Meissenberg et al. in view of Bruckner et al. and Linhard fails to teach the instant invention.

Conclusion

Independent claim 9 has been amended, and is applicable to all claims. Reconsideration and allowance in light of the amendments and remarks herein is respectfully requested. The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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